

Brucellosis Coordination Team
Organizational Meeting
Pinedale Entertainment Center
March 17, 2004 9:00 AM – 4:00 PM

Welcome and Introductions

Frank Galey

Thanking all of us for being here

April 8th and then April 22nd will be the dates for the next two meetings of the Brucellosis Coordination Team. The site of those meetings will be in Lander. The Greater Yellowstone Interagency Brucellosis Committee (GYIBC) in Pinedale will hold a symposium on feed grounds on May 19th. The Brucellosis Coordination Team is invited to that afternoon meeting. We will hold the Brucellosis Coordination Team meeting on May 20th following the symposium.

Introductions and roll call:

Brent Larson-Deputy Force supervisor, USFS-Technical Advisor
Scott Werbelow-Wyoming Game and Fish Department, Technical Advisor
Erika Olson-Attorney General-Technical Advisor
Terry Kreeger-Wyoming Game and Fish Department, Technical Advisor
John Keck-US Park Service, Technical Advisor
Brad Mead-Teton County Rancher and Attorney
Rob Hendry-Lysite, Rancher
Bill Lambert-Osage, Rancher
John Etchepare-Director, Wyoming Department of Agriculture
Bob Wharff-Sportsmen for Fish and Wildlife
Dr. Jim Logan-State Veterinarian, Wyoming Livestock Board
Joel Bousman-Boulder, Rancher, herd owner of one of the herds in quarantine
Senator John Hines-Gillette
Dr. Frank Galey-UW College of Ag Dean
Representative Monte Olson- Daniel
Shawn Madden-Torrington Livestock Market
Dr. Karl Musgrave-State Dept of Health (monitors epidemics) also a Veterinarian
Dr. Bill Williams-Thermopolis, Veterinarian, Game and Fish Commission
Terry Pollard- Pinedale, Outfitter
Dr. Ken Mills-Laramie, Wyoming State Veterinary Laboratory
Kathy Purves-Lander, Wyoming Wildlife Federation
Terry Cleveland-Director, Wyoming Game and Fish Department
Albert Sommers-Pinedale, Rancher
Brett Combs-USDA, APHIS, Area Veterinarian in Charge-Technical Advisor
Donald O'Toole-Wyoming State Veterinary Laboratory-Technical Advisor
Dave Roberts-BLM for Marty Griffith-Technical Advisor
Ryan Lance-Governors Office, Logistical

Members Absent:

Dr. Tom Thorne-Wyoming Game and Fish Department
Dr. Bill Gern, University of Wyoming – Technical Advisor

Charge to the Committee:

Governor Freudenthal

Why Governor Freudenthal has assembled the Brucellosis Coordination Team:
Governor Freudenthal's goal was to gather people of wide interest to ask them to sit for a year and make specific recommendations to be considered. He empanelled the group to make independent recommendations. He wants to avoid much more direct involvement as he had no desire to chair every team meeting or dictate outcomes. The Team is asked to look at Brucellosis with a broader outlook, to

include the economy and the reasons people live here. Development patterns, values including water issues, have now changed. Interest in elk populations in the state is high, such as with the sportsman. The governor has 2 general categories of concern. First, the immediate issue is to regain brucellosis-free status, and, as important, to keep it free. The current outbreak is the immediate issue that caused this task force to exist. Are there things we can immediately change with the livestock and wildlife? Second, the group is asked to look at recommendations for the long term for the state. The group is asked to help solve problems and develop recommendations.

The governor also discussed the need to develop preliminary recommendations about items that might need legislation early so they can get to the legislature in time. He did not want the group to wait until the first of the year to propose legislation as it would never have enough time to get done in the legislature. Otherwise, recommendations would have to expect a year wait. The legislature is interested as they appropriated money to support the Team.

The governor reminded the group of the need to have public comment-at all meetings.

He wants the Team to spend a year for the Brucellosis issue. And even if we get our free status, there is a time when we will have flair up, it won't go away, and we have to step up and have some recommendations.

This year's legislation was the best yet, and there were immediate issues on the brucellosis flair-up. Funding would likely be available for directions and for solutions. Public has a sense of information as well. Members were asked to set interest groups aside and work towards the best outcome for the whole state. Don't settle for strategy that says "here is the deal" each cycle gets more difficult to get out of. Shift the interest towards both sides-wildlife and livestock.

Panel Presentations:

Outlines of all presentations follow the minutes in this document.

Dr. Ken Mills-Wyoming State Vet. Lab - What is Brucellosis?

Questions for Dr. Mills:

Is the WSVL a BSL 3 facility? WSVL can store materials for BSL 3, but can not test them. However, in one month, the WSVL will have a BSL 3 testing facility.

Is there anything this committee can do to help get the BSL 3 facility up and going? No, they got the BSL 3 renovation dollars via Public health's bioterrorism funds, which have been very helpful. Criteria for select labs may be getting more stringent, however.

What idea do you have on turn around time for testing for this spring? Funding is there for 2 more techs, turn around time is the same day they come in for a screen negative sample. A positive test will require further testing.

Dr. Jim Logan, Wyoming State Veterinarian-The Current Situation

Questions for Dr. Logan:

How can another state waive a rule that the WLB has ruled? In the brucellosis rules there are certain requirements that, by agreement by the state vets working with the producer, may be waved on cattle that are used for grazing purposes.

It seems like there is a long time on culture samples from the elk. How do we have to manage this? Titer samples are taking longer, but the elk samples were sent in before the cattle.

When will we know an answer on the elk samples? Do not know how long it will take. Unofficially, they have some answers, but nothing on paper. Large numbers are taken for sampling. Federal lab will release information at their discretion. 12 positives out of 31.

Will a rivenol test distinguish between a positive and a strain 19? No

Terry Kreeger, WG&F, Brucellosis in elk and bison

Questions for Dr. Kreeger:

Did you kill some elk for testing? Not to bleed. Some animals were killed for culture after testing positive. You don't know if there is an increase in infection? Only exposure is assessed from the serology.

Do you have any idea in vaccinated elk of what percentage will abort in contact to herds? No

Elk are establishing new corridors, heading south? Have you been tracking them? Some have been radio collared, and there is a high probability that they will hit the same feed ground, but its not new information or confirmation of something we suspected all along.

How much intermingling can develop from the Grays River feed ground to other new territories they are traveling to? (the answer was not recorded)

How do you monitor and how good are the numbers on counting Elk? (Answer not recorded)

Is vaccination having an effect on the calf crop? How good are the numbers? Feed ground attendance is determined on the severity of the weather. Generally vaccinate every calf that is present.

Scott Werbelow, Wyoming Game and Fish-Primer on Habitat and Feed Grounds

Questions for Scott Werbelow:

How many elk are out there and how many do you feed? 4,000 on native land, 15000 in feed grounds. Ball park, 25,000 elk in the 22 feed grounds, GYA there are more.

Is seroprevalance data made available to the public? Yes, also published. Available to the public.

Ryan Lance, Governors Office- Logistics

This group received funding from the legislature. Ryan suggested that meetings be in the central part of the state. He discussed the logistics on reimbursement for mileage and travel, lodging, and per-diem expenses. Forms were handed out to the team.

Frank Galey-Scheduling, Task management and locations

Timeline: This group needs to have a preliminary report together by the November meeting so there is time before the legislature meets if legislation and/or special funding is recommended.

Final Report: A final report is expected in one year, by March of 2005

Challenge: For each of the Governor's issues, we must identify practices of what we could and should be doing (Best Practices), and make recommendations for BOTH the Long Term and Short Term. The Governor has requested SPECIFIC recommendations-names, who, what, where, and why. Also wants suggestions related to research.

For April 8, lets discuss the following proposed order for the 4 issues we are to address:

1. Transmission of disease between wildlife and livestock and how do we protect cattle. Best practices first, then longer-term issues
2. What are the human health implications and how can we protect human health.

3. What is a good protocol for how we respond to the next outbreak, if there is one? Who do we contact, what do we do, how to do a better job at responding quickly (mostly best practices, short term recommendations).
4. How do we eventually reduce and eliminate the brucellosis in wildlife? Must address the future and operation of the feed grounds as part of this discussion. Best Practices and both Short Term and especially, Long term recommendations.

Meeting schedules:

How do we go about doing this? The group agreed to have monthly meetings selecting, with some exceptions, the third Thursday of each month. The two April meetings and one May meeting will be one day meetings to accommodate calving for many of the participants. Following that meeting, the monthly meetings will span two days, starting at 12 on Thursday and continuing through 12 on Friday.

Location: Lander will be our main meeting site. Meetings in May and July will be held in Pinedale. The September meeting will be held in Casper to accommodate comments from the Eastern part of Wyoming.

The WDA office will need to get an extra block of rooms for the muddy creek feed ground review.

April 8th in Lander
April 22 Lander
May 20 Pinedale
June – 17-18 (2 days) Lander
July – 22-23 (2 day meeting; Muddy Creek Feed Ground tour) Pinedale
August – 26-27 Lander
September – 16-17 Casper
October – 28-29 Lander
November – 18-19 Lander
December – 16-17 Lander
January 2005 – 20-21 Lander
February 2005 – 17-18 Lander
March 2005 - 17-18 Lander

Hard copies to be MAILED out on minutes and Power Point presentations.

Surveillance and marketing issues need to be brought out. Governor will want these recommendations too. This is an important part of the discussion about cattle as well as transmission issues.

General meeting format: We will have an educational component when available, short reports from each subcommittee, committee discussion of the topic at hand, and public comment at each meeting. In addition, each meeting will begin with discussion and approval of the report that the group will be building. It is the intention of the chair to begin a draft of the report after the April 8 meeting. An updated version of the report will be provided to each member prior to each meeting. It is expected that the group will discuss, modify, and approve new material monthly.

Frame work to build on for the 4 recommendations to go to the Governor: The group agreed to break into 4 subcommittees to identify issues to be discussed. The committees will be asked to report regularly to the group. Recommendations, however, will be discussed and developed fully by the whole committee. The whole committee may suggest additional issues to be discussed and priorities will be agreed-upon by the whole committee.

COMMITTEES:

Human Health Issues- Carl chair
Bob Willis
Monte Olsen

Jon Hines
Jim Logan

Cattle Issues-Rob Hendry Chair,
Albert Sommers
Cathy Purves
Ken Mills
Terry Pollard
Shawn Madden
Joel Bousman

Regulatory-Jim Logan, Chair
Bret Combe
Shawn Madden
Monte Olsen
Joel Bousman
Bob Wharff
John Etchepere
Bill Lambert
Brad Mead
Marty Griffith (BLM)
Albert Sommers

Wildlife-Terry, Chair
Technical Advisor Donald O'Toole
T. Kreeger
Bob Wharff
Albert Sommers
Cathy Purves
Terry Pollard
Bill Williams
Brent Larson
Brad Mead
Joel Bousman

Technical Advisors can be on committees: *YES*

Short experts on news releases for the task force members. These news release items may not be available until right before the following meeting.

Periodic press releases to stock growers, roundup, tribune etc....will be undertaken by Ryan Lance's office. Be as transparent as possible to the general public.

***Always put on bottom of agendas "Subject to Change"*

Need a list of all email and phone numbers as well as box numbers for all committee members.

Task Force Members perspectives:

Brad Mead- There is mis information out there. View with an open mind.

Rob-Cattle Representative. We need to make recommendations and light a fire for the GYIBC.

Bill Lambert-Runs cattle in the S. Dakota area. Come up with some goals and plans and carry thru with it.

John Esthenope-Its going to be tight on the 3 counties in Wyoming. Perceptions within our industry (cattle) need to be clarified and given the truth. There are getting to be a lot of misconceptions. Risk is minimal so we must convince our neighbors that this is a handle-able situation.

Bob Wharf-Opportunities are there to find ways to resolve this. Identify problems and find solutions.

Dr. Jim Logan- Attitudes that are willing to make tough decisions and made some decisive actions for the betterment of all industry, for the long term. Attitude adjustments. Rise above it, have respect. Preserve both things and work hard together. Make some tough decisions

Joel Bousman- Hope we all survive the next round of bleeding! To address this issue, that the governor was the only person in Wyoming that was in position to effectively address this for the short and long term. Find a solution to the problem

Senator John Hines- (We must) come up with a plan that a majority of the groups can live with. Work out a compromise, then sell it to the public and the legislature.

Dr. Frank Gale- Advocate for the process of getting recommendations. Keep the process going. Advocate for science.

Monte Olson- 125,000 dollars appropriated for this task force. Not once did any legislator bock at the number. \$1.6 million for the testing and also funded were extra people for the vet lab. Need to send a message to the GYIBC about our seriousness in finding a solution. This task force needs to be very serious, and we need a solution.

Shawn Madden- Perception becomes reality. It is very important, to have a better plan. The situation must be handled correctly with who is talked to. Perception of other states, namely 6-8 states, is the big issue and they are whom we need to focus upon.

Dr. Karl Musgrave- We are aware of 1 or 2 human cases a year. What would we do differently with another outbreak, and what can we do in educating the public, ranchers especially on the disease?

These Task force members will give their perceptions on the April 8th meeting.

Dr. Bill Williams-

Terry Pollard-

Dr. Ken Mills-

Kathy Purves-

Terry Cleveland

Albert Sommers-

Terry Kreeger-

Donald O'Toole-

Public Comments:

Linda Flemming-Wyoming Game and Fish Commission- No question

Loyd Dorsey - Greater Yellowstone Coalition-protecting the ecosystem

The GYC did ask to be on the task force, the make up of the committee, this is weighted very much on the agriculture aspect. What appears to be missing is the environmental community, environmental members needed to be a part of this Task Force. Also what is missing, is the fish and wildlife service is missing from this task force? Group should be aware that this fed. Agency is not here today.

Did the 2nd wildlife presentation give enough science in its slides? If you phase out feed grounds you would loose 80 % of the elk population? Is this correct, if elk feed ground were gone then 22 million dollars would be lost? There is a written episode of the elk traveling to the red desert.

Will the minutes from these meetings be made public? *Answer = Yes*

Bill Barney, Rancher in Big Piney, market own beef directly to consumers as well.

This is not just an issue to the live market. 2 states with class A status, Texas and Wyoming. Texas has abundance of feed, importer of live cattle and Wyoming has to export what we have to sell and not a abundance of feed. For practical purposes is we are the only one. Once one can develop vaccines that are useful in the wildlife, but as a precaution it will cost 250,000 for vaccines, and it's the same amount of money that was lost in the depopulated herd. Out of this will be some thorny issues. I think the Governor has chosen wisely in this committee. History is watching and you will be remembered for what you produce.

Paul Jensen, Daniel, Wyoming

Rather than plead with the states, Montana, Nebraska and Colorado we have learned that the Montana wildlife has managed its habitat for its herd. The more we can promote that we are doing things, bring people in to say that we can do this or more.

The meeting was adjourned at 4:00 PM.

Presentations:

Dr. Ken Mills, Wyoming State Veterinary Laboratory

Brucella was first isolated in 1887 by David Bruce from the spleens of people who died of Malta fever (B melitensis)

- 1897 Fredrick Bang isolated B. abortus from an aborted bovine fetus- First isolated from US cattle in 1910

Brucella

- Gram-negative aerobic bacteria that can be cocci, coccobacilli, or short rods

Some need added CO₂ for growth

Taxonomy based on AA utilization, carbohydrates, and urea-cycle

Erythritol enhances growth of some Brucella

The Family

- B. abortus-Primarily in cattle but also infects horses, sheep, pigs, dogs and humans
- B. melitensis-Primarily in sheep and goats but also in cattle, pigs, dogs and humans
- B. ovis- Sheep
- B. suis- Primarily in pigs but also in cattle, horses, dogs and humans
- B. canis- Dogs but also humans
- B. neotomae-Wood rats

B. abortus biovars

- Biovars 1,2,3,4,5,6,7 and 9
- Identified by conventional tests which can be time consuming
- Recent work by Bricker et. al. may eventually allow PCR techniques to be used which could speed the identification of isolates

Smooth vs rough

- LPS is an important surface antigen which can contain the O-side chain
- Only smooth strains have the O-side chain
- B. abortus virulence is at least partly determined by the O-side chain
- Rough strains have reduced virulence so they are possible vaccine candidates

Transmission of B. abortus to animals

- Licking an infected fetus or placenta
- Licking the genitalia of an infected dam
- Inhalation and conjunctival contamination
- Ingestion of contaminated feed
- Calves can become infected through colostrum and milk

Disease Progression

- After entry through oral mucosa, nasopharynx and conjunctivae, and occasionally the reproductive tract the organism localizes in the regional lymph nodes then enters the blood stream
- The bacteremic phase results in dissemination of the organism to the udder, uterus, and associated LN
- Since this is a facultative intracellular organism it can survive and grow in macrophages and epithelial cells
- Brucella do not appear to stimulate degranulation within the phagocytic cells

Select Agent Designation

- Because B. abortus is a significant zoonotic disease it identified as a select agent by CDC
- This designation precipitates a range of restrictions on handling and shipping the organism
- BSL-3 facility are necessary to handle the organism and personnel need an FBI clearance
- If no BSL-3 facility is available an isolate needs to be shipped to an approved laboratory or destroyed

Disease

- At calving or abortion there are LARGE numbers of organisms in the reproductive tract which are gradually cleared
- The infection is maintained in lymph nodes and the udder
- Most infected animals remain carriers for life and shed organisms in uterine exudates and milk after each calving

Erythritol factor

- Growth of virulent B. abortus is stimulated by the sugar erythritol which is found in fetal tissues and fluids but only in the later months of pregnancy.
- S19 is inhibited by erythritol but still may colonize the bovine placenta so there must be other factors involved with the growth and localization of the organism

What is in a number?

- B. abortus organisms in fetal fluids
- 100,000,000,000 bugs= 1cc syringe
- *infective dose is 10-100

Published survival times

- In manure at 12C—250 days
- In water at -40C—800days
- Placenta and fetal fluids covered with leaves in Winter and Spring—135 days
- Open culture plate in the sun during October and November—2-3 days

Survival trial-WSVL

- Fetal fluids containing a suspension of RB51 were dried on a culture plate
- The plate was left at room temp in a biological safety cabinet
- Periodic sampling was done to confirm bacterial viability
- Positive cultures—70 days

Survival times outside-WSVL

- Uninfected bovine fetuses were soaked in a RB51 suspension (fewer bacteria than a field infection)
- Placed in stainless steel trays and kept inside of wire cages behind the WSVL
- Cultures were done on a periodic basis
- *Cook et al

Survival outside-WSVL

- Study was from February through June
- Cultures were from both the exposed surface and from under the carcass
- Survival ranged from 17 day average to less than one day on the surface
- Survival under the carcass ranged from an average of 60 days to just less than 5 days

Vaccines

- Strain 19 has the 0-side chain which can cause problems with standard serology tests
- RB51 has almost no 0-side chain so the animals response is not detected by standard serology tests (used since 1996)
- NEITHER IS 100 % EFFECTIVE

Vaccine testing or development

- Because B. abortus is a select agent any work with vaccines is expensive
- Initial study headed by Dr. Montgomery will look at adult vaccination with RB51 and will cost 80K+ with no challenge although the study could be converted to include a challenge (funding)
- Development of a new vaccine could easily cost 500K and vaccine trials another 500k-without any guarantee of success
- This in the face of less \$ going toward Brucellosis

Antibiotic therapy-cattle

- The organism itself is sensitive to a number of antibiotics
- Intracellular location of the organism requires a prolonged regiment so treatment is usually not attempted

Brucella serology-WSVL

- BAPA
- Card
- Rivanol
- CF (not done at WSVL)
- FPA as a possible confirmatory test

Procedure: Brucella samples arrive in the laboratory

Samples are normally tested the day they arrive

Buffered Acidified Plate Antigen Test

Necropsy of Brucella cattle

Brucella on a selective media

Immunohistochemistry on mammary gland

Take home points

- The number of bacteria in an animal is highest during the last part of pregnancy and there are tremendous numbers released at birth or abortion
- The organisms remain viable for a long time if they are not in the sunlight
- Brucella vaccines are not 100% effective

- Federal dollars for Brucellosis are declining due to the success of the eradication program

Dr. Jim Logan, Wyoming State Veterinarian-The Current Situation

Brucellosis – An Overview of Wyoming’s 2003-04 Case

General comments from Dr. Logan: Curiosity in bovine as well as bison can lead to infection. 7-9 months of age is when abortions usually occur.

There is a mis-conception that with brucella is that you always have abortion storms. Don’t always see an abortion storm, especially after the first year of abortion. You may see only one or two animals abort, that expose others that might abort the following year. Weak calf syndrome is very prominent. Gets diagnosed as “pneumonia” and within a week or few days will die. These neonates if not tested, will infect others.

Brucellosis...What is it?

- A disease that causes abortion in cattle, elk and bison
- Caused by the bacteria *Brucella abortus*
- Bacteria is shed from infected animal at birthing event.
- Bacteria ingested by susceptible animal
- Incubation period 2 weeks to 2 months and in some cases considerably longer
- Infected animals should be considered life-long carriers
- Susceptibility related to age, pregnancy status.
- Direct relationship between dose exposed to and likelihood of infection.

Susceptibility

- Heifers, pregnant animals most susceptible
- Older animals relatively more resistant

Route of Infection

- Primarily by exposure to an infective abortion or infective calving.
- Brucellosis is a chronic disease
Most common clinical sign is abortion of first calf
- May also cause infertility, weak calves, orchitis and arthritis
- Retained placenta

Overview of Brucellosis:

Epidemiology

- Where does brucellosis come from?
 - Animal to animal
 - Movement of animals commonly (purchases)
 - Retained heifers
 - Direct contact with affected herds
 - Indirect contact with affected herds
- *Brucellosis is a community disease.*

Prevention: Good Management is the NUMBER one thing. There also must be good surveillance with temporal and spatial separation of animals. It is very important that cattle producers keep cattle away from infected wildlife.

- Temporal and spatial separation
- Management
- Surveillance
- Vaccination
 - Calves
 - Adults

Brucellosis Vaccination

- Calfhood Vaccination
 - 4-12 months legally, states may differ
 - RB51 vaccine used
- Whole herd (adult) vaccination.
 - RB51 used.
 - Used in high risk herds and affected herds that are not depopulated.

RB51 does not give you the confusing titer that gives you a positive test Strain 19 vaccines will occasionally give you confusing results on the serology.

Brucellosis Vaccination: Vaccines are not 100% effective.

- Vaccination is only one tool in the management of brucellosis, is not 100% effective.
- Vaccination alone can not be relied on in high risk situations.
 - Six cases in WY cattle determined to be associated with wildlife; 1969 (reinfected 1977), 1982, 1983, 1984, 1985, 1989
- Vaccination must be combined with appropriate herd management.
 - Reduction of exposure

All but two states in U.S. Have Achieved Brucellosis Free Status

- Texas – Class A
- Missouri – Class A
- Wyoming – Brucellosis Free in 1985
- Montana – Brucellosis Free in 1985
- Idaho – Brucellosis Free in 1990

Both Yellowstone National Park and Grand Teton National Park have infected bison and elk

Bison have an approximate infection rate of 50%

Elk have an approximate infection rate of 28%

- Spread from animal to animal more likely in high animal density
22 Elk feedgrounds in Wyoming
- National Elk Refuge

More Risk of Transmission to Cattle from Bison than from Elk

- Due to behavioral characteristics
- Bison are more gregarious and likely to mix with cattle
- Elk are more likely to isolate at calving time and are more fastidious

Elk Feedground Areas of Western Wyoming have Infected Elk

- Infection rates vary from 10-40%
- National Elk Refuge has elk and bison with similar infection rates
- State wildlife agencies in Wyoming, Idaho and Montana are proactive in prevention and surveillance efforts

Impacts of Brucellosis Remaining in the GYA

- Potential for spread of Brucellosis in wildlife beyond the GYA
- Wildlife health and population could be affected
- Nation-wide surveillance will need to be maintained at high level indefinitely
 - Expensive, approx. \$30 million annually

- Marketability of WY, ID, & MT cattle affected
- Heightened focus on cattle industry in GYA
- Remaining Reservoir of infection

Brucellosis and Bioterrorism

- *Brucella abortus* is listed on the Center for Disease Control's list of select agents for bioterrorism
- *Brucella abortus* is a problem of potential public health significance – it can cause “Undulant Fever” in humans

Brucellosis as an Occupational Disease There are certain groups at risk for brucellosis, vets and ranchers. Sportsman and hunters can also be at risk. One hunter has been tested positive with Brucellosis in the greater Yellowstone area.

- Farmers/ranchers
- Veterinarians (food animal practice)
- Brucellosis eradication personnel
- Artificial inseminators
- Meat inspectors
- Abattoir workers
- Laboratory workers

How is Wyoming Addressing the Problem?

Cattle Industry –

- Achieved “Free Status” in 1985
- Vaccination using RB51 vaccine
- Management – temporal/spatial separation from wildlife
- Surveillance
- Testing

Wyoming Livestock Board

- Chapter 2 Brucellosis Rules
 - Individual identification
 - Vaccination
 - Importation requirements
- Surveillance
- Risk Assessments
- Work with APHIS and other states to maintain marketability

March 4th had teleconference meeting, adopted new emergency rules. Rules require all test eligible cattle, 18 mo of age and older sexually intact, pregnant, or already calved, to be tested within 30 days prior to interstate movement, or 30 days prior to new ownership in-state. 1.65 million dollars towards testing cattle, thanks to Rep Monte Olsen, \$3.50 per head toward the testing. We have to comply with the testing requirements for one year on Class A status. After one year, we can apply for free status if we test clean in that year timeframe. This test requirement will not automatically disappear. The interstate requirement would not be in effect if we went to class free but we will still have some testing for some time to come due to restrictions potentially imposed by neighboring states.

Wyoming Game and Fish Department

- Temporal/spatial separation
- Fencing
- Habitat improvement
- Elk vaccination with Strain 19 vaccine
- Testing/Surveillance

Wyoming Brucellosis Case Update

- Brucellosis is a reportable disease.
 - Each case must be reported to state and federal regulatory officials.

- State veterinarians inform other state veterinarians.
- Investigation is a cooperative effort involving
 - WLSB
 - APHIS
 - Producers
 - Livestock Auction Markets
 - USFS
 - BLM
 - State Veterinarians

November 18, 2003

- Four slaughter tracebacks
- Traced to Sublette County ranch
- Ranch adjacent to Muddy Creek Elk Feedground

Nov. 18th notified by USDA that we had 4 positive cases come back. Thru back tag identification and ear tag identification and thru brand inspection and sale barn records were traced to ranch in Sublette County. Herd was quarantined and tested on December 2 and 3rd. Investigation was a cooperative effort between producers, USDA, AFIS, livestock board and auctions, forest service and BLM. Many from USDA and other states that participated in assisting on testing. 31 reactors. Equal percentage to the numbers vaccinated (RB 51 or Strain 19) that was reactors. Entire herd had been vaccinated for years for brucellosis, points out that vaccine is not 100% effective. Exposure can override the vaccine. Muddy Elk Feed ground.

December 2-3, 2003

- Whole herd test completed on “index” herd
- 391 head tested
- 31 reactors
- 20+ suspects

Contact and Adjacent Herds Identified

- Eleven herds identified and placed under movement restrictions
- Testing completed second week of January, 2004
- Negative test results confirmed on approximately 4,000 head
 - Four suspects found
 - Rivanol negative All adjacent and contact herds to be tested post-calving

December 29, 2003

- Index herd designated as “infected” by USDA APHIS

January 6, 2004

- WLSB emergency meeting
- Emergency rule requested requiring negative test within 60 days prior to change of ownership on all test-eligible breeding cattle

January 14, 2004

- Index herd depopulated
- Index herd had been appraised and indemnified by USDA APHIS at fair market value.

Human component:

Herd was appraised at fair market value, but cant pay for the emotional and heritage related things the case brought with it. Especially when the owner had to depopulate.

January 15-20, 2004

- Twelve cows from index herd traced to Worland feedlot and tested.
- Results showed 6 reactors
- APHIS considers cattle in a feedlot as a “herd”
- APHIS designates feedlot as Wyoming’s 2nd infected herd

Found cattle in a Worland feedlot, it was a terminal feedlot, and a direct trace back to the original infected herd. Animals were tested for both serum brucellosis reactivity and pregnancy testing. One animal was pregnant and another from the feel of her uterus, may have aborted. All the cattle from the infected and contact herds had been vaccinated, but among the 12 cattle, one 3 year old, from the infected herd by brands, did not have a vaccination tattoo or tag. Cattle in a feedlot are considered to be in a herd. So has to be handled in the same manner and resulted in Wyoming’s Class A status.

Epidemiology

- Tracing of cattle from index herd continues
- Involves cattle tested in Wyoming
- Involves cattle moved to Montana, South Dakota, Nebraska and Colorado

January 21, 2004

- Wyoming notifies other state veterinarians and producers about 2nd infected herd designated by APHIS
- Brucellosis free status jeopardized by this finding
- Downgrade to Class A status when APHIS publishes in Federal Register
- Gov. Freudenthal appeals decision

When we have free status, we can transport freely without the need for testing. Vet will now be charged between 2 to 3 dollars and indirect expenses to the cattle industry. Those indirect expenses to the industry are: wear on equip., time, stress and shrink, and also injured cattle. Indirect expenses are estimated to 5-10 dollars. Indirect expense also occurs from the loss of market and sales from other states, one case a few weeks ago, there as a loss of a quarter of a million dollar in sales of some bulls in Wyoming.

Wildlife Testing

- WGFD and WLSB personnel trapped, tested and radio collared 15 cow elk on Muddy Creek Feedground on 1/28/04
- Results pending
- Positives will be euthanized and tissues harvested for culture and typing

WG&F has been cooperative. Testing was done on the Muddy Creek Feed ground. Jan 28 elk were trapped and tested. 4 positive out of 15 tested elk. Those animals were radio collared and when tests came back they were harvested for testing. Infection is in the wildlife, and we had an infection in the cattle, and we need to take precautions to prevent this in the future.

Class A Status Requirements

- All test-eligible cattle must be test-negative within 30 days prior to interstate movement or change of ownership
- Slaughter cattle *may be* exempt if herd of origin identification is maintained
- WLSB will promulgate rules to comply with Class A status if Wyoming loses Free status

Interstate Movement of Commuter Herds:

Test requirement may be waived by a state vet of the state of destination, case by case basis.

If Brucellosis remains in the greater Yellowstone area, there is a huge fiscal responsibility for which we are responsible. In congress, in the USDA funding, even though we still have brucellosis, congress isn’t as excited about putting big dollars towards aspects of the program. Marketability of cattle has had a big fiscal impact. The testing requirement is big all by itself. Producers lost the sale of cattle to other states because of misperceptions.

Dr. Logan and Mr. Etchepare met with Nebraska, Colorado officials to talk about these misperceptions, and to try and get help on educating their producers on the relatively small risk Wyoming has.

Terry Kreeger, WG&F, Brucellosis in elk and bison

(No outline was received from Dr. Kreeger)

Notes: Brucellosis was first detected in GYA in 1930. In most animals, it has an incubation period of 90 days, but there is a large range. There is an average of a 61% prevalence rate in elk. A 7-12% calf loss is expected in naturally infected elk. Bulls are not thought to play much of a role.

Brucellosis is also a problem in Bison. It probably started from exposure to imported animals. Bison are more like cattle; elk are different in their behavior. Bulls may be chronically infected. Transmission occurs from exposure to fluids from abortions, but milk also can transmit the disease.

Diagnosis: 4 elk from the Muddy Creek Feed ground were culture-positive for brucellosis. A positive reaction means that the animals were positive to two or more tests. Game and Fish has been working on validation of a new enzyme linked assay. That assay is not field-use friendly, however. Thus, it cannot be used at a shoot test site. There needs to be a faster test for field testing. Has not been validated for elk or bison. Blood kits to hunters. Can find numbers to elk that are not on feed ground.

Positive blood reaction only indicates exposure to brucella, at Muddy Creek there is 29 % seropositive. Just because an animal is seropositive does not mean it's going to be culture positive.

Feed grounds:

From one dead fetus, hundreds of elk can be infected. 65,000 acres have been improved because of WGF programs. Vaccination of elk is occurring on 22 feed grounds. The program plans for vaccination of calves and cows the first time-around, then the calves thereafter.

Vaccinating Elk:

Strain 19 vaccine was first developed for cattle but now used for elk. It is delivered via a Bio bullet. Can vaccinate a lot of elk a day after they adapt them to the noise of the bio bullet.

RB51 vaccine gave no protection to abortion in elk. Strain 19 has more efficacy than RB51. RB51 provided pure antibody response in elk. But that is not what you want in a brucella vaccine. Rather, an effective vaccine must stimulate the cell-mediated immune system not just antibodies. Elk are not Cattle. Thus, the vaccine may not be a valid tool in elk. Because of the fundamental difference in elk and cattle research must continue to identify a vaccine or vaccine strategy that might work in that species. .

Vaccines for brucellosis are not 100% effective in any animal.

Large numbers of abortions are not found on feed grounds.

Bison vaccination

Strain 19 may or may not protect bison. Vaccination of bison will require a long range bio bullet. Studies are now ongoing to identify such a longer-range bio-bullet that might reach out to 100 to 125 feet.

Summary:

Development of these vaccines is expensive, and can take a minimum of 3 years of testing and research. Even then, it may not work very well. To put things in perspective, prior to 1989, before all the efforts from all services, there were 8 positive cases from wildlife to cattle. Since then, one, Muddy Creek.

Scott Werbelow, Wyoming Game and Fish-Primer on Habitat and Feed Grounds

Feed Ground History

- 1908- Severe winter in Jackson hole. Hundreds of elk died of starvation.
- 1912- Legislation appropriated \$5000.00 to feed elk on the National Elk Refuge.
- 1929- Wy Game & Fish started three feed grounds to prevent large scale die-offs. These feed grounds were Green River lakes, Greys River and Gros Ventre.
- These feed grounds were started to prevent starvation and large scale die-offs.

Early History

- Elk were fed at many different locations in the next 35 years.
- The Department has fed elk in at least 51 different locations since 1948.
- Many of the Pinedale feed grounds were started in the late 40's and 1950's to prevent damage to stored and un-stored hay.
- Many sites were temporary and only small amounts of hay were fed.
- By the early 1960's the present system was in place.

Feed Ground History Cont...

- The final two feed grounds were started in the 1970's.
- We currently manage 22 State operated feed grounds in addition to the National Elk Refuge.
- These feed grounds are located in Sublette, Lincoln and Teton Counties.
- 15-16,000 elk are fed annually on the 22 State operated feed grounds.

Feed Ground History Cont.

- Length of feeding season can be from 70-160 days.
- Hay is generally fed with draft horses and sled.
- We have experimented with one ton bales and tractors on several feed grounds.
- The Dept. purchases between 6000-9000 tons of hay annually.
- The majority of the hay comes from Star Valley, Pinedale and some from Idaho.
- All of the hay hauling is contracted out and takes approx. 4-5 months to complete hauling.
- The majority of the hay purchased is certified weed free hay.
- Elk are generally fed between 8 and 10 lbs. Daily.
- Elk feeders are hired on a contract basis and some feeders feed more than one feed ground.

NER Feeding Operation

- National elk refuge fed approx. 5900 elk this past winter.
- Feed alfalfa pellets at four different locations with mechanized equipment.
- Feed long lines to encourage dispersal of animals.
- Feed Bison at separate locations to alleviate conflicts when necessary.

Feed Ground Locations (Map was handed out)

Development

- Development has blocked crucial elk migration routes and has taken up crucial space and needed habitat for elk survival.
- There has been 4,080 new housing starts in the past 10 years in Lincoln, Sublette and Teton Counties.
- Elk feed grounds have been strategically placed to gather elk and short stop them from entering private lands and causing damage.

Regulatory Factors

- Any new feed ground requires commission approval. “Last one created was in 1979”
- Regional Commissioner must approve temporary/emergency feeding.
- Commission has established quotas for each feed ground and quotas for each herd unit.
- State law requires Department to compensate landowners for damage to crops by big game animals.

Elk Feeding – Pros

- Feed grounds gather elk at specific locations to prevent damage to stored and un-stored crops.
- Feed grounds allow Dept. to maintain stable elk numbers.
- Feed grounds prevent starvation and are popular with much of the public.
- Feeding prevents elk and cattle commingling.
- Feeding prevents elk/vehicle collisions.
- Feeding prevents damage to shrubs, fences etc.
- Feeding maintains high elk numbers and allows humans and elk to co-exist.
- Feeding allows elk to be vaccinated against Brucellosis.
- Feeding allows Dept. to get accurate classifications on large elk herds to better structure population models and set elk hunting seasons.
- Feeding elk reduces competition with other species for crucial winter habitat.

Feeding Cons

- Feeding congregates elk and increases disease transmission.
- Feeding is expensive (Costs the Dept. approx. 1.3 million dollars annually to manage 22 feed grounds. This doesn't include research on diseases.
- Feeding can send a message that habitat is not important!!

Goals/objectives for feed ground management

- Provide nutritional supplement to wintering elk that frequent elk feed grounds.
- To minimize damage conflicts on adjacent private lands.
- To control Brucellosis within elk and minimize risk of transmission to cattle.
- To save money were possible by management of starting/stopping dates.
- To reduce the dependency of elk on feed grounds, primarily through improved native ranges.

What are we doing to reduce prevalence levels of Brucellosis?

- Vaccinate elk with Strain 19.
- Start feeding as late as possible and quit feeding as soon as possible.
- Spread elk out as much as possible on feed grounds.
- Try and feed on clean snow daily.
- Prevent elk from commingling with cattle.
- Provide stack yard material to ranchers.

Continued.....

- Provide habitat improvements to encourage elk to be less dependant of feed grounds.
- Construct elk fences to prevent elk from migrating onto private land.
- Haze elk back to feed grounds when they become displaced onto private land.
- Develop late season hunts/kill permits to remove problem elk when all other attempts have failed.
- Immediately, collect any aborted fetus found on feed grounds and send to lab for testing.

Abortion Rates

- How often do we find aborted fetus's on feed grounds??
- 8 Pinedale feeders with a combined 129 years of service were recently polled.
- Out of 8 feeders with a combined 129 years of service, they fed 74,032 elk.
- Out of 74,032 elk fed, 28 abortions were detected by feeders.
- This represents .037%

Abortion Rates Cont....

- Keep in mind, feeders probably don't find all of them, but feeders are on the feed ground every day for the length of the feed season.
- Sometimes a feeder may only notice a blood spot in the snow as predators and birds clean them up very quickly.
- Aborted fetus's are almost always found during the months of February and March.

BFH Program

- 1991- BFH program was started to address Brucellosis issues.
- The Dept. implemented the program to manage Brucellosis in elk.
- Big Piney was chosen as a study area for habitat improvements and possibly phasing out or combining several feed grounds.
- The BFH program is a multi-faceted approach utilizing the following management strategies:

Strategies Cont....

- Vaccination (as many elk as possible with Strain 19)
- Minimizing the number of days that elk are fed (and congregated) to the extent possible.
- Keeping elk and cattle separated through fencing and/or actual hazing of elk when necessary.
- Habitat improvement projects adjacent to feedgrounds and reduce the elks dependence on supplemental feeding.
- Information and education.

Various Techniques Used

- Prescribed Fire
- Aspen Cutting
- Range Pitting

Brief History

Piney BFH Area (projects completed)

- 11 vegetation enhancement projects totaling 9,371 acres.
- 3 mechanical treatments = 4,476 acres.
- 3 Herbicide (spike) treatments = 1,355 acres.
- 5 prescribed burns = 3,540 acres.

Pinedale BFH Habitat Projects

- 9 prescribed burns = 12,300 acres
- 2 herbicide (spike) treatments = 620 acres.
- 3 mechanical (cutting) treatments = 110 acres.

Jackson BFH Habitat Projects

- 28 projects completed from 1990-2003
- 23 prescribed burns totaling 44,600 acres.
- 5 mechanical projects totaling 1,100 acres.

Habitat Enhancement Summary

- 53 completed projects totaling 68,101 acres since 1990.
- 37 prescribed burns = 60,440 acres.
- 5 herbicide treatments = 1,975 acres.
- 11 mechanical treatments = 5,686 acres.

Elk Surveillance

- Over 10,000 elk trapped since 1971.
- Over 3,500 females blood tested since 1971.
- All elk that are trapped are ear tagged. This provides needed distribution data.
- All adult cows are collared. We have learned over years that elk frequent different feed grounds from year to year.

What have we learned from all of this since 1990???

- Habitat improvements can be effective, but need to be strategically placed and often require cooperation/funding from other land management agencies.
- Habitat improvements can be very beneficial on light snow years, but often times do not provide enough forage for elk on a heavy snow year.

“Winter Elk On Native Ranges”

- *Winter snow depths preclude many areas as suitable winter range.*
- There currently is not enough winter range to support present herds.
- We need to be careful that we don't build elk numbers where we don't want them and then have a heavy snow year.
- Elk will generally move down country and find the first available food source, which is generally a haystack or cattle feed line.

Suggested Strategies

“Migration to Red Desert”

- Did this actually ever happen? And how many elk actually made this migration??
- This is based on the premise that thousands of elk once migrated from Jackson to the Red Desert.
- It probably never happened and if it actually did it wouldn't happen today because of development and private land holdings.
- The Dept. does not see this as a viable option today because of disease issues, methods and no surplus forage to compete with other species.

Management Suggestions

“Eliminate Feed Grounds”

- This would increase elk/livestock interactions.
- We would have to decrease elk numbers 70-80%, or 10-12 thousand elk.
- A loss of about 22 million dollars to the states economy from NW. Wyoming.
- Increase damage claims to the Dept. cause poor working relationships with livestock producers and local ranchers.
- Increased conflicts with Highways, fences etc.
- What works in one situation may not work in another.
- Are sportsman, hunters, outfitters and the general public willing to decrease their elk herd by 80%
- Who will be responsible for large scale die-offs due to starvation?
- How will elk be vaccinated?
- What will keep elk from commingling with cattle and causing damage to crops?

- After 5 years of drought can our current winter range support more elk without affecting current deer and antelope populations?

Questions to Consider...

Questions Cont.....

- If we had available forage for elk, how would we get them through private property?
- How would we keep them on native winter range during a bad winter??
- Where would they go? Would they starve?
- These are all important questions that need to be answered.